

**Amendments to the Drawings**

At page 5 of the Official Action, the Examiner objects to the drawings because Figures 5-7 are missing. The attached sheet of drawings includes Figures 5-7.

Attachment: Replacement Sheet

**Remarks**

Claims 28-45 are pending in the application. Claims 1-27 have been canceled without prejudice or disclaimer to the subject matter therein. Claims 28-45 have been submitted to more clearly define the invention.

Claims 28-40 are directed to a method for creating a physical teeth model, while claims 41-45 are directed to a physical teeth model for use in fabricating a dental crown, a dental bridge or the like. Claims 28-40 find support throughout the specification and claims as originally filed.

More specifically, claim 28 is supported by original claims 1 and 8, as well as, for example, page 4, lines 10-11 of the specification as originally filed.

Claim 29 is supported by originally filed claims 2, 3, and 6, of the present application.

Claim 30 is supported by original claim 2. Further, claim 29 is supported by the present specification at, for example, page 7, lines 13-14.

Claim 33 contains the subject matter of, and corresponds to, originally filed claim 13.

Claim 32 contains the subject matter of, and corresponds to, claim 15 as originally filed.

Claim 33 contains the subject matter of, and corresponds to, originally filed claim 16.

Claim 34 is supported by, for example, the present specification at page 7, line 26 to page 8, line 1.

Claim 35 contains the subject matter of, and corresponds to, claim 17 as originally filed.

Claim 36 is supported throughout the specification as originally filed. In particular, claim 36 finds support in the specification at page 2, line 17 and line 25, page 2, lines 14-15, 17, 20-21, 25-26, page 7, lines 6, 15-17 and the abstract.

Claim 37 is supported by original claim 4, as well the specification at page 3, lines 23-26.

Claim 38 is supported by claim 2 as originally filed, as well as by the specification at page 7, lines 21-22.

Claim 39 corresponds to, and is supported by, claim 12 as originally filed.

Claim 40 is also supported by claim 12, as originally filed, as well as the specification at, for example, page 7, lines 11-17 and 21-22.

Claim 41 is supported claims 1 and 8, as originally filed, as well as, for example, page 4, lines 10-11 of the present specification. Further support for claim 41 can be found in the specification at, for example, page 2, lines 23-38, and page 4, lines 5 and 8-13.

Claim 42 is supported by original claims 2, 3, and 6 of the present application.

Support for claim 43 can be found in claim 16, as originally filed, as well as throughout the present specification.

Claim 44 is supported by, for example, the specification at page 7, line 26 to page 8, line 1.

Support for new claim 45 can be found at claim 17, as originally filed.

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A drawing "replacement sheet" containing figures 5-7 is also submitted herewith. Support for Figures 5-7 can be found in the present specification at, for example, page 5, lines 10-14, as well as throughout pages 9-10.

As can be seen, support for claims 28-45 is prevalent throughout the specification as originally filed. As such, Applicants respectfully submit that no new matter within the meaning of 35 USC § 132 is added by the introduction of claims 28-45 into this application.

Claims 1, 2, 6, 8, 22, 24, and 26, stand rejected under 35 USC 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0197740; claims 1, 2, 4-6, 8, 10-12, 21, 22, 24 and 26 are rejected under 35 USC 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0064759; claims 3 and 9 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0064759 in view of U.S. Patent Application Publication No. 2002/0081554; claims 7, 23, 25, and 27, stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0064759 in view of U.S. Patent 4,521,188; claims 13, 15-17, are rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0064759 in view of U.S. Patent 2,621,406; claims 14, and 18-20, are rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0064759 in view of U.S. Patent 4,521,188 and in further view of U.S. Patent 2,621,406.

In view of the remarks set forth herein, further and favorable consideration is respectfully requested.

**I. THE ANTICIPATION REJECTIONS**

**A. Amar**

At page two of the Official Action, the Examiner rejects claims 1, 2, 6, 8, 22, 24, and 26, as being anticipated by U.S. Patent Application Publication No. 2004/0197740 to Amar ("Amar"). Applicants respectfully submit, however, that Amar is not a valid reference against the present invention under 35 USC § 102(e). In view of the following, this rejection is moot.

According to the MPEP § 706.02(f)(1), a U.S. Patent Application, filed pursuant to 35 USC § 371 based on an international application filed on or after November 29, 2000, will only have 35 USC 102(e) date if the international application was published in English, and designates the United States. If one of the aforementioned conditions is not met, the publication will not have a 35 USC 102(e) filing date. See also MPEP §§ 706.02(a) and 706.02(f)(1).

Amar is a national phase U.S. Patent Application, published on October 7, 2004, filed under 35 USC § 371, and based on the international application WO 02/089695. The WO 02/089695 application was published on November 14, 2002 in French. Therefore, since the PCT application was published in French, and not English, Amar does not meet the requirements of MPEP § 706.02(f)(1) and cannot be cited as a reference against the present invention under 35 USC § 102(e).

Applicants submit that Amar does not constitute prior art against the present application because Amar does not have a 33 USC § 102(e) priority

date. Accordingly, Applicant's respectfully request reconsideration and withdrawal of this rejection.

**B. Durbin et al.**

At page 2 of the Official Action, the Examiner rejects claims 1, 2, 4-6, 8, 10-12, 21, 22, 24 and 26 under 35 USC 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0064759 to Durbin et al. ("Durbin et al.").

Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

Anticipation under 35 USC § 102 requires that a single prior art reference describe each and every element of the claimed invention. See *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP § 2131. The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP §2131. The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

The present invention is directed to a method for creating a physical teeth model as well as a physical teeth model created from a virtual 3D image of a patient's dentition, or at a least a part thereof, for use in fabricating a dental appliance. The present invention, among other things, requires that the model has ***an alignment arrangement to permit proper occlusion alignment of the spatial relationship between a patient's jaws in occlusion.*** As a consequence, "the present invention provides a dental articulator that precisely

simulates the occlusion relationship of the jaws as well as the three-dimensional movement of the jaw.” See present specification at page 4, lines 22-24.

Durbin et al. is drawn to a method and system for treating teeth wherein a 3D digital dental model is modified for use in dental treatments. Durbin et al. teaches taking an intraoral scan, creating a virtual 3D model therefrom, and fabricating physical working model based on the virtual 3D model. See Durbin et al. at para. 27.

However, Durbin et al. does not teach or suggest a teeth model with *an alignment arrangement to permit proper occlusion alignment of the spatial relationship between...jaws in occlusion.*

In view of the above, Applicants respectfully submit that Durbin et al. fails to teach each and every element of the claimed invention as required for anticipation under 35 USC § 102(e). Accordingly, the Examiner is respectfully requested to withdraw this rejection.

## **II. THE OBVIOUSNESS REJECTIONS**

Applicants respectfully traverse these rejections. The references of record do not teach or suggest Applicants' inventive subject matter as a whole as recited in the claims. Thus, the Examiner has failed to establish a *prima facie* case of obviousness against the presently rejected claims.

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under § 103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of

ordinary skill in the art; and, (4) inquiring as to any objective evidence of nonobviousness.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all the claim limitations. *Amgen, Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See *Ex parte Clapp*, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. *Id.* at 974.

**A. Durbin et al. and Marshall et al.**

At page 3 of the Official Action, the Examiner rejects claims 3 and 9 under 35 USC § 103(a) as being unpatentable over Durbin et al. in view of U.S. Patent Application Publication No. 2002/0081554 to Marshall et al. ("Marshall et al."). Applicants respectfully traverse this rejection.

Claims 3 and 9 have been cancelled. However, newly added claims 29, 30, 42, and the claims that depend both directly or indirectly therefrom, recite either a plaster model or blank. All of those claims depend either from claim 28 or 41 which incorporate the additional feature of a teeth model with *an alignment*



*arrangement to permit proper occlusion alignment of the spatial relationship between...jaws in occlusion.*

As discussed above with respect to the 102(e) rejection, Durbin et al. fails to teach the limitations of the present claims. Namely, Durbin et al. does not teach or suggest a teeth model with *an alignment arrangement to permit proper occlusion alignment of the spatial relationship between...jaws in occlusion.*

Marshall et al. is directed to methods for scanning and registering parts having complex geometrics. In particular, Marshall et al. is drawn to dental study casts, mating houses shells for electronic devices, pacemakers, and other devices. See Abstract of Marshall et al.

Applicants respectfully submit that Marshall et al. does not cure the deficiencies of Durbin et al. The additional feature that the dental molds are made from plaster does not remedy the deficiencies in the primary reference. Therefore, this combination of references is not capable of rendering obvious the present invention.

In view of the aforementioned, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

**B. Durbin et al. and Metzler**

At page 3 of the Official Action, the examiner rejects claims 7, 23, 25, and 27, under 35 USC § 103(a) as being unpatentable over Durbin et al. in view of U.S. Patent 4,521,188 to Metzler ("Metzler").

The examiner asserts that "it would have been obvious to one of skill in the art at the time the invention was made to form a negative model as opposed

to the positive model formed in the method of Durbin, in view of Metzler, as the negative and positive models are interchangeable.” Applicants respectfully traverse this rejection.

As discussed above with respect to the 102(e) rejection, Durbin et al. fails to teach the limitations of the present claims. Namely, Durbin et al. does not teach or suggest a teeth model with *an alignment arrangement to permit proper occlusion alignment of the spatial relationship between...jaws in occlusion*.

Metzler is drawn to a dowel pin which may be affixed to a die segment. The dowel pin has a plurality of facets which provide a number of planes, edges and angles to constrain the pin and associated die segment to an orientation with respect to the base of a dental model. See Metzler at Abstract and Summary of Invention.

As no additional feature of Metzler remedies the deficiencies in the primary reference, Applicants respectfully submits that this combination of references does not teach all of the limitations of the claimed invention. Therefore, this combination of references is not capable of rendering obvious the present invention.

Accordingly, Applicants respectfully request that this rejection be reconsidered and withdrawn.

**C. Durbin et al. and McPhee**

At page 4 of the Official Action, claims 13, 15-17, are rejected under 35 USC § 103(a) as being unpatentable over Durbin et al. in view of U.S. Patent 2,621,406 to McPhee (“McPhee”). Applicants respectfully traverse this rejection.

As discussed above with respect to the 102(e) rejection, Durbin et al. fails to teach the limitations of the present claims. Namely, Durbin et al. does not teach or suggest a teeth model with *an alignment arrangement to permit proper occlusion alignment of the spatial relationship between...jaws in occlusion.*

McPhee relates to dentures, and the like, in which the plaster models formed are completely devoid of tooth models. In contrast, independent claims 28 and 41 of the present invention recite that the model is “based on a virtual three dimensional (3D) representation of said patient’s dentition that comprises at least a region of the teeth that includes a tooth stump on which a crown is to be fitted or a region onto which a bridge is to be fitted.”

Durbin relates to a method for treating “teeth” based on a virtual model. Further, Durbin does not indicate any need to match upper and lower *physical* Models. MCPhee on the other hand, relates to dentures, which no longer addresses treating teeth per se. Moreover, MCPhee is in no way directed to virtual tooth models; rather, only in physical models of the gums of a patient. Thus, there is no motivation for a person of ordinary skill in the art to combine the references.

Assuming *arguendo*, that the references are combined, the result would still not be the present invention. In fact there would be no reasonable expectation of success. To the contrary, in MCPhee, “markings 69” are marked on the upper and lower models to provide the correct intermaxillary space into which the dentures may eventually fit. Transferring this to the models of Durbin, the corresponding “markings 69” would be marked according to the ridges of the

teeth, and thus the McPhee method would result in an intermaxillary space between the teeth, which is in direct opposition to claims 28 and 41 which recite permitting "proper occlusion alignment of the jaws of said model."

Furthermore, as has already been stated, "markings 69" of McPhee are formed by physically tracing the ridges of the gums in the models. In contrast, the alignment arrangement of the present invention is "based on a 3D data file of said patient's jaws and of the spatial relationship between said jaws in occlusion." This limitation is neither disclosed nor suggested in the references, either alone or in combination.

As no motivation to combine these references exists, the present invention cannot be rendered obvious by the combination of Durbin et al. and McPhee. Further, even if motivation to combine Durbin et al. and McPhee does exist, there would be no reasonable expectation of success in doing so. Therefore, Applicants respectfully request reconsideration and withdrawal of this rejection.

**D. Durbin et al., Metzler, and McPhee**

At page 4 of the Official Action, the Examiner rejects claims 14, and 18-20, under 35 USC § 103(a) as being unpatentable over Durbin et al. in view of Metzler and McPhee. Applicants respectfully traverse this rejection.

As has been established above, the combination of Durbin et al. and Metzler does not teach all of the limitations of the claimed invention. Namely, Durbin et al. does not teach or suggest a teeth model with *an alignment arrangement to permit proper occlusion alignment of the spatial relationship between...jaws in occlusion*. Further, nowhere in Metzler is this feature taught,

suggested or disclosed. Because Metzler does not remedy the deficiencies in the primary reference, this combination is clearly not capable of rendering obvious the present invention.

In addition, combining McPhee with Durbin et al. and Metzler will not render the present invention obvious. As established above, there is no motivation to combine McPhee with Durbin et al., and even if there were, there would be no reasonable expectation of success. Further, if motivation were established, "markings 69" of McPhee are formed by physically tracing the ridges of the gums in the models. In contrast, the alignment arrangement of the present invention is "based on a 3D data file of said patient's jaws and of the spatial relationship between said jaws in occlusion." This limitation is neither disclosed nor suggested in the references, either alone or in combination.

Applicants respectfully submit that a prima facie case of obviousness has not been established. The aforementioned combinations of references either lack suggestion or motivation to modify the cited references to obtain the presently claimed invention, a reasonable expectation of success cannot be expected in doing so, and the combination of prior art references clearly do not teach all of the limitations of the present invention.

Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the present rejections.

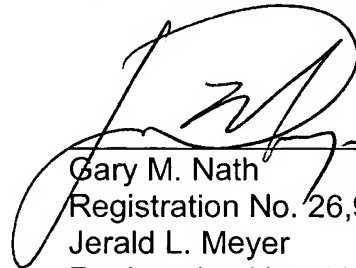
**CONCLUSION**

In view of the foregoing, Applicant submits that the application is in condition for allowance. Early notice to that effect is earnestly solicited. The Examiner is invited to contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicant petitions for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

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